UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

EPIC GAMES, INC.,	No. 4:20-CV-05640-YGR-TSH
Plaintiff, Counter-defendant,	**WRITTEN DIRECT TESTIMONY OF JAMES E. MALACKOWSKI**
vs.	Trial Date: May 3, 2021
APPLE INC.,	Time: 8:00 a.m.
Defendant, Counterclaimant.	Courtroom: 1, 4th Floor
	Judge: Hon. Yvonne Gonzalez Rogers
	Ex. Expert 12

I.   Summary of Opinions

1.   My work is focused on providing an understanding of the value of Apple's intellectual property ("IP") assets, to which it has exclusive rights, and the use of Apple's extensive IP by others. I also analyze Apple's investment in innovation, which has resulted in a significant IP portfolio, of which a substantial portion is directed to the technology at issue in this case. The significance of this technology to the iOS ecosystem is amplified because Apple's innovation is integrated across iOS hardware, software and app developer tools and each element, as well as the iOS ecosystem as a whole, benefits from Apple's ongoing dedication to innovation. Epic's requested remedies and the proposals of its experts not only seek to allow Epic to free-ride on Apple's IP through the equivalent of a compulsory license, but expect that Apple will continue to innovate, for Apple's own iOS ecosystem as well as for the benefit of Epic and its proposed app store, and will provide Epic with free access to Apple's ongoing innovation.

2.   **Opinion 1** – Apple's IP rights are generally exclusive rights. ¶¶ 15-21, pp. 3-4.

3.   **Opinion 2** – Apple has valuable IP in its iOS ecosystem. Apple has made a substantial and sustained investment in research and development resulting in a significant IP portfolio, a substantial portion of which is directed to the technology at issue in this case. ¶¶ 22-25, pp. 4-6.

4.   **Opinion 3** – The significance of Apple's IP relating to iOS, the App Store, and software and tools licensed to app developers is amplified because Apple's innovation is integrated across iOS hardware, software and app developer tools. ¶¶ 26-38, pp. 6-8.

5.   **Opinion 4** – Apple's IP rights are integral to the development, testing and distribution of apps for the iOS ecosystem. Apps and app developers, as well as the iOS ecosystem as a whole, benefit from Apple's ongoing dedication to innovation. ¶¶ 39-43, pp. 8-9.

6.   **Opinion 5** – Epic acknowledges its use of Apple IP in the development, promotion and distribution of the iOS version of *Fortnite* and the importance of that use to the development of its *Fortnite* iOS app. ¶¶ 44-46, pp. 9-11.

7.   **Opinion 6** – The analyses of Epic and its experts in this matter are flawed because they fail to consider Apple's IP rights and the importance of Apple's patents, copyrights, trademarks and trade secrets, Apple's history of innovation and the value of those innovations to consumers and app developers. ¶¶ 47-60, pp. 11-14.

8.   **Opinion 7** – Epic is seeking essentially a compulsory license to all of the IP necessary to distribute apps to iOS users, without any provision for compensation to Apple for the use of its IP, and without any restrictions that Apple may deem necessary to protect the security, privacy and reliability of the iOS system for itself, consumers and other developers. This proposal is fundamentally inconsistent with the exclusive rights conferred by patent, copyright, trademark and other IP laws. ¶¶ 61-71, pp. 14-16.

9.   **Opinion 7.1** – Epic's requested injunction and its experts' proposals seek to require Apple to invest in innovation to benefit Epic and its proposed app store, without compensation to Apple. ¶¶ 64-68, pp. 15-16

10.   **Opinion 7.2** – Epic's remedies and its experts' proposals seek to prevent Apple from enforcing its IP rights or even setting the terms according to which such IP rights would be licensed. ¶¶ 69-71, p. 16.

II.   Background and Qualifications

11.   I am the Chief Executive Officer of Ocean Tomo, LLC, and am responsible for its services, which relate to intellectual property, including financial expert testimony, valuation, strategy consulting, patent analytics, investment management and transaction brokerage. Prior to founding Ocean Tomo in 2003, I conducted intellectual property valuation, strategy and investment management analyses while holding positions with other firms. I have specialized in intellectual property issues for more than 35 years. DX-4876

12.   My experience extends to matters of general business valuation and commercial disputes, both domestic and foreign. On more than fifty occasions, I have served as an expert in U.S. Federal Court, U.S. Bankruptcy Court, State Court and the Ontario Superior Court of Justice on questions relating to intellectual property economics, including the subject of valuation and the equities of a potential injunction. DX-4876

13.   I am a frequent instructor for graduate studies on intellectual property management and markets as well as speaking on emerging technology markets and related financial measures. I have substantial experience as a Board Director for leading technology corporations and research organizations as well as companies with critical brand management issues. As an inventor, I hold more than twenty U.S. patents. I am Certified in Financial Forensics, a Certified Licensing Professional, and a Registered Certified Public Accountant in the State of Illinois. DX-4876

14.   My expertise in intellectual property has been recognized by leading intellectual property publications and organizations:

- ▪ *IAM Magazine*:

  - • A founding and continuous member of the IP Hall of Fame Academy, comprised of individuals with acknowledged expertise in international intellectual property issues;

  - • One of the World's Leading IP strategists since 2007, comprised of individuals who lead in the development and implementation of strategies that maximize the value of IP portfolios; and

  - • One of the World's Leading Patent Professionals, based on recognition in the industry for exceptional skill sets and profound insights into patent matters

- *National Law Journal*: listed in its inaugural list of 50 Intellectual Property Trailblazers & Pioneers

- Licensing Executives Society:

  - Past President of LES International and of LES USA & Canada, Inc.; and

  - Member of the Standards Development Organization Board, regarding the design of and teaching of business process aspects of intellectual capital management

- World Economic Forum, one of fewer than twenty members of the Network of Global Agenda Councils to focus on questions of IP policy

DX-4876

III. Opinions

A. Apple's Intellectual Property Rights Are Generally Exclusive

15.   The U.S. Constitution guarantees the right of exclusivity to IP assets as an incentive to innovate, resulting in the creation of new goods and services. Exclusive IP rights not only incentivize innovation, they can also protect an IP owner's rights in: maintaining or improving the quality of their product or service; ensuring consumer safety or improving product security and privacy; improving the ease with which consumers can use a service; and preventing free-riding.

16.   IP owners, having invested in innovation and obtained patents, copyrights, trademarks and/or trade secrets to protect their inventions, have the right to seek a return on their investment. IP protections offer an incentive to invest in costly research and development by providing the exclusive opportunity to obtain the reward of economic benefits resulting from the investment. One strategy is to use the IP owner's right of exclusion to prevent use of their IP by others. An alternative available method for an IP owner to obtain a return on its investment in innovation is to license some or all of its IP. An IP owner does not have an obligation to grant a license to its IP, nor is an IP owner denied the ability to enforce its IP because it refused to license its IP.

17.   IP owners can select the strategy they find most beneficial if they decide to license their IP rights, including whether the license is exclusive or non-exclusive, whether they will seek a payment, the form of payment they choose to seek (one-time payment, running royalty, tiered royalties, structured payment terms or a combination), the length of the license provided, restrictions on use of the IP, and terms regarding the ownership of related IP developed as a result of the license.

18.   Apple has the right to the exclusive use of its IP, to determine if and how to provide to others access to its IP, and to seek a return on its investment in innovating and developing IP. Apple has enforced its IP rights in various courts and before regulatory agencies, including multiple patent-infringement suits against, for example, Samsung; copyright infringement litigations against, for example, Psystar; testimony before the Copyright Office to protect its copyrights; trademark litigation against, for example, Amazon; and trade secret litigation against employees who leaked confidential Apple information.

19.   In some instances, Apple has exercised its right to IP exclusivity. For example, unlike Google and Microsoft, Apple does not license its operating systems, including iOS, for use on third-party devices. Apple has chosen to reserve and exercise its right to exclusively use its intellectual property for the design and production of its own devices.

20.   When it launched the iPhone in 2007, Apple initially chose not to permit the use of iOS by third-parties to create native apps for download and installation on iOS devices. That changed with the introduction of the iPhone Developer Program in 2008 and Apple's release of its software development kit ("SDK") for third-party developers' use in creating native applications for the iPhone. To facilitate app development by entities ranging from individuals to large companies, Apple has provided access to Apple's IP, including its IP that covers approximately 150,000 iOS application programming interfaces ("APIs") and other app developer tools, to the members of the Apple Developer Program and registered iOS developers pursuant to its Apple Developer Agreement and Developer Program License Agreement ("DPLA"), as well as other license agreements.

21.   Access to Apple's IP and the App Store resulted in an explosion in the number of apps available on the App Store, from more than 500 apps available at the launch of the App Store on July 11, 2008 to 1.4 million apps available in 2015 and 1.8 million apps available in November 2020, with more than 180 billion cumulative downloads by app users. DX-5486

B. Apple Has Valuable IP in Its iOS Ecosystem

22.   Apple's investment in research and development has grown over time. Since its FY 2005, when Apple began working in earnest on the iPhone, Apple's annual research and development expenditures have grown from approximately $0.5 billion in FY 2005 to almost $18.8 billion in FY 2020, for a combined total of more than $101 billion in this period, resulting, in part, in iOS ecosystem innovations protected by patents, trademarks, copyrights, and trade secrets. DX-5487
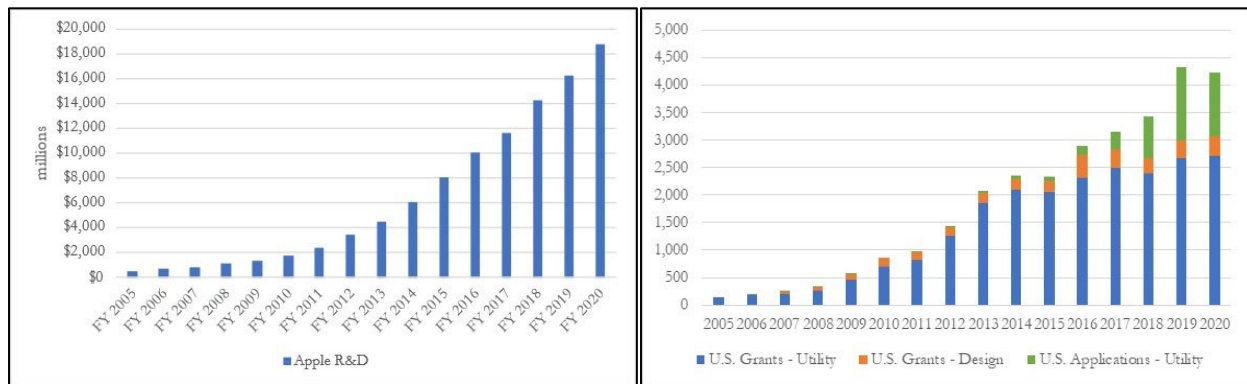
23.   Apple's innovations and IP rights (patents, copyrights, trademarks and trade secrets) in the iOS ecosystem obtained during its innovation related to the iPhone and iOS include IP rights related to technology at the center of this case, such as IP rights relating to Apple's App Store, IAP, iOS development tools, App Review, and iOS security. These IP rights include:

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- Almost 3,200 U.S. patents and applications relating to app distribution and development, including development tools, APIs in frameworks and related services, in-app purchases, and security and privacy and other technology designed into iOS and iPhone hardware and software that are used by app developers in developing iOS apps, including, among others:

  - 108 U.S. patents and 10 U.S. patent applications referring to Apple's CoreAudio, CoreGraphics, and CoreVideo APIs, [DX-4889.200-.203] which function to interact with the iOS device's media hardware and media pipelines for processing digital video; DX-5478

  - 4 U.S. patents and 1 U.S. patent application referring to CoreMotion, [DX-4889.200-.203] which allows the use of movement and environment-related event data; DX-5479

  - 22 U.S. patents and 6 U.S. patent applications referring to UIKit, [DX-4889.200-.203] which defines core components of an iOS application offering features such as event handling infrastructure or multi-touch, animation support, and app extension support and resource management; DX-5479

  - 5 U.S. patents and 12 U.S. patent applications relating to In-App Purchase [DX-4889.200-.203]; and DX-5479

  - 1 U.S. patent and 1 U.S. patent application referring to CloudKit, [DX-4889.200-.203] which enables authentication and structured asset storage services; DX-5479

  - 165 U.S. patents and 91 U.S. patent applications referencing the App Store [DX-4889.200-.203]; DX-5479

- Approximately 1,237 U.S. patents and 559 U.S. patent applications referencing iOS [DX-4889.207] as well as more than 200 registered copyrights including the term iOS, [DX-4889.197] as well as copyrights on Apple documentation, source code, and software; DX-5476, DX-5481

- Registered trademarks for the term App Store®, developer tools such as CloudKit® and Swift® and slogans used to promote the App Store, such as "There's an app for that"®; [DX-4889.198] and DX-5477

- IP rights in security technology central to the ongoing protection and function of the Apple App Store and iOS devices operating third-party native apps, including U.S. patents and applications on security and authentication-related technologies and tools as well as trade secrets.

24.   Apple's continuing investment in its iOS ecosystem, from its initial development of iPhone-related technology through today, has enhanced value by adding features to new generations of the iPhone and new versions of iOS, as well as enhancing other elements of the iOS ecosystem. Each component of the iOS ecosystem, as developed and improved over time, has and contributes value, including the App Store, IAP, iOS development tools, and iOS ecosystem security, including App Review.

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25.   Apple's commitment to and investment in innovation related to the iOS ecosystem has resulted in success of the iOS platform, dramatic growth of the App Store, and continuing trust of customers in the security of the iOS platform from Apple's consistent focus on innovations in security, as well as a substantial portfolio of IP. Corroborating my opinion regarding the significance of Apple's IP, an independent analyst has estimated the value of Apple's intangible assets, including intellectual property assets, to be over 60 percent of Apple's business enterprise value.

C. Apple's Integrated Innovation Across iOS Ecosystem Amplifies the Significance of Apple's IP

26.   Apple's integration of its innovation across its iOS hardware, software and app developer tools amplifies the significance of Apple's IP relating to iOS, the App Store, and software and tools licensed to app developers. Apple's improvements in its iOS ecosystem are integrated, with improvements in one aspect combining with improvements in other aspects to enhance the overall iOS ecosystem. The integrated nature of this development benefits Apple's iOS hardware, software and app developer tools, which have evolved in combination and are integrated to reinforce and improve each other.

27.   The integrated nature of the development of innovations in the iOS ecosystem has been present since the introduction of the iPhone, when Mr. Jobs explained that the iPhone was a combination of three revolutionary devices and offered benefits from the combination of innovations in its novel touch screen, human interface, and other hardware, as well as the "desktop" features, apps, and other software provided by its operating system (then known as "OS X," before being renamed "iOS" in 2010, which is a foundational layer of software, allowing apps to run and access features of the device, such as the touch screen). After the launch of the App Store, this integrated innovation approach was used in developing and improving APIs that work with and build on hardware and software features. Mr. Cook confirmed that the iOS ecosystem continues to benefit from this integration of innovation across proprietary hardware, software and service elements.

28.   This integrated nature of development extends to Apple's iPhone security architecture, which builds security measures into iPhone hardware that support and integrate with the security protections provided by software and app review. Apple provides layers of protection to help ensure that apps are free of known malware and additional protections are enforced regarding access by apps to user data. Apple's security controls are implemented to provide a stable, secure platform for apps.

1. API and Software Innovations

29.   Apple's APIs and other software and tools offered to app developers integrate with and rely on iOS and iPhone hardware features such as iPhone motion sensors, media hardware and media pipelines for processing digital video, as well as touch screen. By developing its iOS hardware, operating systems and software tools in coordinated efforts across multiple Apple teams, including those focusing on chips, software, APIs, and the camera, Apple is able to streamline getting innovations to iOS app developers, allowing them to access new features more

quickly, facilitating development of apps with enhanced performance and quality, which leads to more users downloading those apps.

30.   A majority of the engineering performed by Apple supports and benefits app developers, whether it is for developing hardware features, software features in the operating system, Apple's APIs or capabilities of the App Store for distributing and supporting apps. Apple's investment in engineering and other resources in its model of design integration produces app developer tools and services that not only gives app developers access to new iPhone and iOS features, but also enables app functionality that previously did not exist and provides easier to use and more powerful capabilities by which app developers can incorporate these new iPhone and iOS features into their apps, all while maintaining user privacy and security.

31.   Since Apple's launch of its first SDK in 2008, containing 10,000 APIs, Apple has provided a suite of tools that facilitated use of iPhone's multimedia hardware and software to support creation of full console games, not feature-constrained cell phone games. Multi-touch is one example of the benefits of Apple's iPhone and API technology for app development, including for game apps. At Apple's 2008 event launching its SDK, app developers highlighted multiple APIs, including Cocoa Touch, which used iPhone's advanced multi-touch capabilities, allowing everything from single finger touch to multi-finger touch to gestures. The touch layer of the iPhone has benefited from continued Apple investment resulting in, for example, enhanced smooth scrolling and a very fast rate of frames per second.

32.   Apple has continued to add and update features in new generations of the iPhone and new versions of iOS, such as the iPhone's built-in sensors, camera technology, audio technology, networking technology and data storage technology tools and services made available to app developers and included by app developers in apps. For example, Apple's innovation in graphics technology includes its enhanced Metal framework, which directly communicates with the graphics processors to render advanced 3D graphics and perform data parallel computations, maximizing the graphics and computing potential of iOS. Apple has protected Metal with 15 U.S. patents and applications, as well as copyrights and trademarks. Epic used Metal for *Fortnite* and promoted Metal at the 2015 Worldwide Developer Conference ("WWDC 2015") and the 2018 Worldwide Developer Conference ("WWDC 2018"), including characterizing Metal as revolutionizing graphic design and allowing app developers to create richer 3D worlds.

33.   The benefits of the integrated nature of Apple's iOS ecosystem innovations for app developers are illustrated by Nex Team's HomeCourt app, introduced in 2018, which demonstrated a new application for the camera using the CoreML app. Apple holds a U.S. patent application relating to CoreML, [DX-4889.200] which integrates complex machine learning technology developed by Apple with data from iPhone hardware for use by an app developer. HomeCourt uses CoreML to track basketball shots by simply pointing an iPhone at a court. Without any sensors on the basketball court, ball, or player, HomeCourt can measure a player's release time and angle of a shot, how fast the player is moving before shooting, and the player's vertical leap. HomeCourt took advantage of the new A12 bionic chip in the latest iPhone models, XS, XS Max, XR, with significantly faster speed to offer, for the first time, "real-time AI-powered analysis." DX-5477

34.   Apple's integrated approach to the development of its APIs, software, and security innovations benefits Apple as well as iOS app developers, enhancing Apple's ability to compete for the attention of app developers, and providing incentive for app developers to release their apps first on the iOS platform. Apple's approach reduces app developers' work from the programming side, while providing developers access to new powerful features of each iOS device.

2. Security Innovations

35.   Mobile devices, particularly those where native third-party apps can be installed, face significant and distinctive challenges that have forced Apple to innovate with respect to its security approaches and protections. App developers benefit from Apple security and privacy innovations that are designed into iOS and iPhone hardware and software, structured asset storage, and other software technology, as does the functionality and operation of Apple's App Store. The layers of protection that Apple provides help ensure that apps are free of malware, and that the App Store provides a stable and secure platform for apps.

36.   The Apple iOS platform combines hardware, software and services that work together to provide security, with the ultimate goal of keeping personal information safe. Apple's security approach includes building security measures into iPhone hardware that support and integrate with the security protections provided by software and app review. Apple works to ensure that App Review security tools are designed and updated for the latest software and hardware, to ensure that they are ready to perform their security functions upon the release of the latest software and hardware.

37.   Apple has obtained U.S. patents on security and authentication-related technologies and tools. DX-5479

- 47 U.S. patents and an additional 37 U.S. patent applications referencing authentication technology;

- 35 U.S. patents and an additional 41 U.S. patent applications referencing authorization technology; and

- 8 U.S. patents and an additional 7 U.S. patent applications referencing framebuffer and security. The use of framebuffer objects can permit an app to move complex image decompression and drawing logic into a separate process for the purpose of increasing security.

38.   Apple also protects as trade secrets certain of its investment in security technology. In the security arena it is important to maintain a level of secrecy about the details of Apple's proprietary security mechanisms to avoid providing a roadmap of Apple's defenses to potential attackers, making trade secrets an important element of Apple's security-related IP.

D. Apple's IP Rights are Integral to Development, Testing and Distribution of Apps

39.   Apple's IP rights are integral to development, testing and distribution of apps for the iOS ecosystem. Apple has invested in innovating and developing tools, software and other

technology for the development and testing of apps and distribution of apps through Apple's App Store on Apple's iOS devices. The App Store, and Apple's innovations relating to the App Store, have benefited consumers and developers by creating a secure and trusted marketplace for apps.

1.   App Developers Access Apple's IP Rights Pursuant to Licenses

40.   Apple makes available to app developers an extensive library of developer documentation and API code, including tutorials, sample code, articles and APIs, that are protected by Apple IP, including patents, copyrights, trademarks and trade secrets. App developers use Apple's IP to develop apps for the iOS ecosystem, to distribute apps for use in the iOS ecosystem by consumers, and to monetize apps through the iOS ecosystem, if the developer chooses to charge for its apps and/or in-app purchases of digital content. In other words, a developer cannot participate in the iOS app marketplace without using Apple's IP.

41.   Apple has chosen to create the "Apple Developer Program" in order to enable app developers to access and use protected Apple technology and services for their own development and testing of apps, as well as the ultimate distribution of such apps through the App Store. Through the Apple Developer Program, app developers can obtain limited licenses, pursuant to the Developer Agreement and the DPLA, to access a broad array of tools, software and other IP created, updated and enhanced by Apple, including the SDKs, operating systems, beta OS releases (providing access to developers prior to public release of updates), advanced app capabilities, and other software, as well as the App Store Connect suite of web-based tools to distribute pre-release versions of apps via TestFlight and to publish approved apps on the App Store. These licenses work in conjunction with various software-specific licenses, such as license agreements that govern each download of Xcode, SDK, or sample code, as well as Apple's published, publicly-available Guidelines.

42.   The license terms under which Apple provides app developers access to its IP are stated in the agreements it enters with app developers, such as the terms of the Apple Developer Agreement, the DPLA and individual software licenses, and are consistent for all app developers. Apple's licensing practice is long-standing and serves Apple's business objective of maintaining a dynamic App Store for the benefit of users and app developers while protecting Apple's IP rights. Developers, including Epic, are permitted to use Apple's proprietary software, tools and/or services only pursuant to licenses from Apple. The licensing arrangements help prevent developers from free-riding on Apple's innovation.

43.   ~~Similarly, Apple has maintained a consistent policy of requiring iPhone users to accept and agree to the terms of an iOS and iPadOS Software License Agreement under which "Apple and its licensors retain ownership of the Apple Software itself and reserve all rights not expressly granted."~~

E.   Epic Acknowledges Use of Apple IP

44.   Epic acknowledges that it has used Apple IP in its development, promotion and distribution of the iOS version of *Fortnite.* Apple has more than 2,500 U.S. patents covering

aspects of technology used by app developers such as Epic, as well as copyrights, trademarks, and trade secrets. Epic has used, for example, thousands of Apple APIs, multiple versions of Apple SDKs and XCode builds, and the XCode integrated development environment that provides developers with software features necessary to design, develop and debug software for use on iOS and macOS. In addition, Epic has benefited from engineering support, services and capabilities provided by Apple to support the development of advanced app features and address issues with *Fortnite*.

45.   Epic has admitted to using at least the following Apple APIs, which are referenced in more than 280 Apple U.S. patents and applications. ~~[DX-4889.200]~~ DX-5479

	U.S. Patents	U.S. Applications	Total
AudioToolbox	2	-	2
AVFoundation	2	1	3
CloudKit	1	1	2
CoreAudio	38	4	42
CoreGraphics	72	7	79
CoreMedia	26	4	30
CoreMotion	4	1	5
CoreVideo	19	1	20
Foundation	26	5	31
GameController	6	2	8
GameKit	1	-	1
iAD	4	1	5
In-App Purchase	5	12	17
Metal	11	4	15
MultipeerConnectivity	-	1	1
QuartzCore	5	-	5
StoreKit	1	1	2
UIKit	22	6	28
UserNotifications	12	3	15
WebKit	52	10	62
Total	309	64	373
Total Removing Duplicate Patents	235	52	287

46.   Apple places copyright protection on its software, documentation and source code covering iOS content, APIs, beta iOS releases, SDKs and other materials used by an app developer like Epic. The names of certain frameworks Epic acknowledges using are trademarked by Apple, including CloudKit®, iAd® and Metal®. Epic has benefited from the

use of Apple's trademarks and brand when, for example, Epic showcased its launch of *Fortnite* during the WWDC 2015, presented about *Fortnite* on iOS during the WWDC 2018, and collaborated in other marketing efforts with Apple. Apple has also promoted *Fortnite* through its marketing channels including App Store banners featuring *Fortnite,* as well as posts and paid advertisements on social media.

F. Epics' Experts' Analyses Are Flawed Because They Ignore Apple's IP Rights

47.   The analyses of Epic and its experts, Drs. Evans, Athey and Mickens, are flawed because they fail to consider Apple's IP rights and the importance of Apple's patents, copyrights, trademarks and trade secrets. None of these experts addressed the importance of Apple's IP and the role of Apple's IP rights, nor did they acknowledge the need to consider or evaluate Apple's IP, in providing their opinions regarding the potential distribution of apps outside the App Store and security aspects of this proposed app distribution, including Apple's App Review process.

48.   Epic's experts' analyses and proposals appear to assume and rely on broad access to Apple's IP, such as access to Apple's IP-protected iPhone features, iOS, APIs and proprietary tools used for app reviews, potentially including those tools protected as trade secrets or others not shared with third-parties. This assumed access is incorporated in the proposals of Epic's experts without consideration of any need to obtain authorization from Apple, including the terms and conditions of license agreements, or the need to provide the compensation that would be due to Apple for use of Apple's exclusive IP rights.

49.   It is my opinion that Epic's experts' analyses and proposals, and as a result their ultimate conclusions, are flawed because of this failure. In fact, both Dr. Evans and Dr. Athey acknowledged in their depositions that Apple's IP would be used in the but-for world each propose, confirming the flaws in their analyses and the need to consider Apple's IP. Evans Dep. 468:25-469:9; Athey Dep. 212:18-24.

1. Dr. Evans Ignores Apple's IP and History of Innovation

50.   Dr. Evans opined that Apple has invested little in innovation and provided limited services to developers. Although Dr. Evans acknowledged that "Apple was able to use iOS and the features of the iPhone to provide a well-designed and easily used app store," and that the iPhone was characterized as "revolutionary" offering multi-touch and "desktop-class email, web browsing, searching and maps," he asserts that "other app stores would have had access to those same iOS and iPhone features for their stores." Dr. Evans, however, did not identify any inquiry that he performed into the specific nature of Apple's innovation, the contributions made by Apple's innovation and features, the investment that Apple has made in its innovations, or the protection of those innovations by Apple IP. Instead, to reach his conclusion regarding Apple's lack of investment in innovation and limited services to app developers, Dr. Evans only listed features that he claims relate to Apple's lack of investment in innovation and provided anecdotal, high-level descriptions, without specific consideration of Apple's innovation or contributions.

51.   Despite his failure to evaluate the Apple IP rights protecting its innovations with respect to the App Store, Dr. Evans testified during deposition that he recognizes that a developer must

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use Apple's IP to develop apps for the iOS ecosystem. He testified that he would expect it to be the case that Apple makes available to app developers an extensive library of developer documentation and code that is protected by Apple IP rights. Evans Dep. 468:25-469:9. These admissions reinforce my opinion that Dr. Evans's failure to evaluate Apple's innovation and IP rights, the role they play in Apple's iOS and iPhone features used by apps, the App Store and Apple's app developer tools and services, and the terms and conditions under which others may be granted access to Apple's IP rights, casts doubt on his analysis of the hypothetical world that he contends would exist "absent Apple's exclusionary practices."

52.   Dr. Evans reached his conclusion regarding Apple's lack of innovation without analyzing or acknowledging either Apple's IP relating to the iPhone, iOS, App Store or app developer tools and services, or Apple's investment in research and development. Over the life of the iPhone, Apple has continued to innovate and introduce improvements and enhancements in each component of its ecosystem – hardware, software and services – that benefit app developers and the App Store. Dr. Evans' but-for world appears to assume continued access to Apple's IP in its iOS and iPhone features by third-party app stores, without any consideration of the terms, conditions, or compensation for that access, even though in his deposition Dr. Evans admitted that developers must use Apple's IP to develop apps for the iOS ecosystem. Evans Dep. 468:25-469:9.

53.   Dr. Evans' but-for world not only disregards Apple's existing IP and its extensive research and development, that world is not consistent with Epic's own requirement in the Epic Online Services Developer Agreement that "establish[es] terms regarding [a developer's] use of the [Epic] SDK and related Services" and sets out various license restrictions and acceptable uses. Epic acknowledges that the terms and restrictions in a license agreement can provide for compensation, consistent with Epic's interest in obtaining a return on its proprietary software rather than "provid[ing] Unreal Engine as a public service." Epic has sought and obtained 15 active granted U.S. patents, 154 U.S. copyrights and 315 trademarks, giving it the right to exclude use by others and to obtain a reward for the right to use its invention. The same principles are equally applicable to Apple, but Dr. Evans disregards them in his but-for world.

2. Dr. Athey's Middleware Analysis Ignores Apple's IP Despite Her Deposition Admission that Her Proposed Economic Middleware Would Use Apple's IP

54.   Dr. Athey defines "economic middleware" as technologies that reduce user application-related switching costs; reduce user application-related mixing-and-matching costs; reduce developers' costs of providing services that enable user app migration and synchronization to multiple platforms, further reducing user app-related switching and mixing-and-matching costs, and reduce developers' multi-homing costs. Dr. Athey opines that she would expect greater innovation in economic middleware absent Apple's challenged conduct. In offering her opinion, Dr. Athey never analyzes the degree to which Apple IP would need to be used to develop such middleware for iOS apps. Inherent in Dr. Athey's analysis is her assumption – confirmed during her deposition – that her proposed economic middleware would require connection to the iOS operating system through APIs. Because those APIs are protected by Apple IP, her proposal would require the use of Apple's IP. Athey Dep. 212:18-24. Dr. Athey also acknowledged in

her deposition that developers of iOS apps must use Apple IP, and that it is not possible to develop an iOS app without the ability to call iOS APIs or to put an app on the iOS platform without using Apple's tools and APIs on which Apple holds many patents. Athey Dep. 209:1-7, 25-210:2. In addition, Dr. Athey testified that the iOS apps connect to iOS through the APIs exposed by the operating system and that Apple would have to remove its IP-protecting restrictions to allow multiplatform app stores to operate on the iOS platform. Athey Dep. 212:18-213:24.

55.   Dr. Athey's deposition admissions confirm the flaws in her opinions. Apps using Dr. Athey's hypothetical middleware would need to use – and operate with – the IP-protected iOS that Apple has developed, which reflects and protects Apple's earlier and ongoing developments in iOS, the App Store, and developer tools. Dr. Athey's proposed economic middleware, and the hypothetical but-for world in which it would operate, fail to take into account Apple's IP rights, which are exclusive rights that Apple enjoys under federal and state IP laws. Nor did Dr. Athey evaluate whether Apple would have to make changes in order to accommodate her proposed economic middleware and, to the extent changes would be required, what those changes would be. Dr. Athey also does not address whether or how Apple would contract with multiplatform app stores, or the form of a license, if any, between Apple and the middleware entity.

3. Dr. Mickens Assumes Use of Apple's IP Without Permission

56.   Without explicitly acknowledging that Apple has IP rights protecting its iPhone and app security, Dr. Mickens acknowledges that Apple's security process uses iOS technology as well as App Review and that Apple must invest in security technology on a sustained basis to address evolving security threats.

57.   Dr. Mickens provides an assessment of app security that emphasizes the role and importance of Apple's proprietary iOS software. Dr. Mickens concludes that many, but not all, aspects of app security can be achieved based on an operating system alone, without the assistance of App Review.

58.   According to Dr. Rubin, and as I understand Apple's witnesses will testify, Apple's security architecture, and the way in which Apple provides iOS and app security, is far more sophisticated than reliance only on iOS on-device security. He also observes the importance of updates to Apple's existing App Review and iOS security and other software, and the evolving nature of threats posed to iOS devices. Apple maintains many security tools for its internal use that are protected to ensure that they do not provide a roadmap for circumvention by potentially malicious app developers.

59.   Apple's IP rights protect the technology throughout Apple's layers of protection in its hardware and software, including updates. Apple maintains these protections by updating its proprietary App Review tools as a regular and ongoing process consistent with the release of the latest hardware and software from Apple and to identify the latest threats.

60.   Dr. Mickens ignores that Apple has chosen not to license iOS, and instead to maintain its exclusive right to iOS as proprietary software. Dr. Mickens' analysis appears to rely on

assumptions that third-parties would be provided access to Apple's proprietary iOS features as well as IP-protected APIs, security patents, and trade secrets for the foreseeable future. It is only with use of these Apple IP-protected security assets, but without addressing terms and conditions of or compensation for such use, that Dr. Mickens is able to propose that third-parties could attempt to provide comparable levels of security to that provided by Apple.

G. Epic Essentially Seeks a Compulsory License to Apple's IP Necessary to Distribute and Operate iOS Apps

61. I understand that Epic challenges various of the restrictions in Apple's DPLA and has indicated that it intends to seek injunctions that would prevent Apple from "restricting, prohibiting, impeding, or deterring the distribution of iOS apps through a distribution channel other than the App Store," including by enforcing its contractual provisions, guidelines, or policies. I also understand that Epic intends to seek an injunction that would prevent Apple from "[d]enying iOS app stores [and iOS apps downloaded through a distribution channel other than the App Store] access to iOS functionality that the App Store [and apps downloaded through the App Store] has access to."

62. Epic's requested injunctions, and its experts' proposals, are fundamentally inconsistent with the exclusive rights conferred by patent, copyright, trademark and trade secret laws. Epic is essentially seeking a compulsory license to all of Apple's IP necessary to distribute apps to iOS users, without apparent consideration of Apple's IP that would be required, the investment made by Apple to create such IP, or the compensation due to Apple for the use of its IP. They would force Apple to make available aspects of iOS technology that it has not previously licensed. In addition, Epic's apparent request for a compulsory license does not appear to contemplate permitting Apple to implement restrictions on the use of its IP that Apple may deem necessary to protect the security, privacy and reliability of its iOS system for itself, consumers and other developers. Epic's experts failed to address the terms and conditions of any use of Apple's IP in their proposals that app developers be allowed to distribute iOS apps through third-party app stores on iOS devices.

63. Epic's requested injunctions and expert proposals would essentially eliminate the limitations under which Apple has agreed to license its proprietary technology. Rather than a limited, non-exclusive, personal, revocable, non-sublicensable and non-transferable license to IP for the right to develop, test and distribute apps using Apple IP through Apple's protected App Store, Epic seeks an unlimited license to develop, test and distribute apps using Apple IP.

1. Epic's Demand for Apple to Innovate and Invest for Epic's Benefit

64. If implemented as requested, Epic's proposed injunction and its experts' proposals would require Apple to innovate and invest for the benefit of Epic and its proposed app store, apparently without compensation to Apple, reducing Apple's incentive to innovate and invest in IP.

65. Apple has made substantial investments in innovation related to the iPhone, iOS, APIs and related security. The analyses and proposals of Epic's experts appear to assume and rely on

broad access to Apple's IP protecting these innovations, such as access to Apple's IP-protected iPhone hardware and software features, security protections, APIs, and proprietary tools, including those protected as trade secrets, used for app review.

66.   Epic's experts, Drs. Evans, Athey and Mickens, each appear to confirm, but disregard, that Epic's proposed injunctions and their preferred outcomes would require ongoing, presumably unlicensed, access to Apple's IP, including its iOS technology, by app developers and third-parties providing app stores on iOS devices, including access to aspects of its iOS technology not previously licensed or made available to third-parties. Although Drs. Evans and Athey assume access to Apple's IP, their analyses and opinions are not accompanied by any discussion of obtaining authorization from Apple, the terms and conditions of any license agreements, evaluating the IP rights that would be used by Epic in distributing apps to iOS users, or providing (or attempting to determine) the appropriate amount of compensation that would be due to Apple for use of Apple's exclusive IP rights. Similarly, the suggestion by Dr. Mickens that third-parties be permitted access to Apple's proprietary security technology and processes ignores Apple's IP rights in iOS and its proprietary security technology and processes as well as related materials, such as underlying source code and other documentation.

67.   I understand that the scope of the compulsory license that Epic requests would not be limited to only Apple's currently licensed IP. Epic's proposals demand continuing and equivalent access to any Apple IP that would be available for use by apps distributed through Apple's App Store, without evaluating or identifying such IP. This IP would include both Apple's current technology and innovation in iOS, as well as additional iOS technology that Apple does not presently license and potential future IP-protected technology resulting from Apple's ongoing innovation and development that would be used by future apps. Epic's requested injunctions and expert proposals would not only seek to compel Apple to grant a license to its existing IP, but to maintain and update that IP for the benefit of Epic, and any other app developer, whether or not that developer had ever entered into an Apple license, apparently without compensation and under terms and conditions not set by Apple. Epic does not evaluate the extent to which accommodating Epic's requests would require Apple to modify iOS to enable third-party app store access; to develop or modify iOS and iPhone security procedures to protect users and the iOS ecosystem from malware or other vulnerabilities that could be introduced through the middleware or third-party app stores; or to facilitate updates made by the developers of the apps distributed through the third-party app stores.

68.   Based on an assumption that Apple will continue to invest in developing IP as it has in the past, Epic's experts similarly assume not only continued access to and use of Apple's currently existing technology, but also additional Apple technology as Apple continues to innovate, including any that may be required to be developed by Apple, such as Apple IP needed to download, install and execute an app on an iOS device from third-party app stores. There is no consideration of the appropriate compensation for the use of Apple's IP in Epic's experts' proposed alternative worlds, nor the appropriate terms and conditions for use of Apple's exclusive IP rights. If imposed as requested, the compulsory license implied by Epic's injunction requests and its experts' proposals would potentially increase Apple's costs while reducing the potential return or reward available to Apple from its innovations.

2.   Impact of Epic's Remedies and Its Experts' Proposals on Apple's IP Rights

69.   iOS is Apple's proprietary operating system, protected by Apple's IP, which has been developed and enhanced through Apple's investments since at least Apple's FY 2005. Apple's IP-protected innovations in its iOS ecosystem integrate its development of and improvements to iOS hardware, software, and security innovations in the iPhone and App Store with its development and innovations in app developer APIs and other software tools.

70.   Epic's proposed injunctions and the proposals of its experts would impose additional costs and burdens on Apple as well as limit its right to compensation for its investment in its IP, thereby reducing the potential return or reward available to Apple from innovation and impairing the value of Apple's IP. Instead, Apple would be forced to grant a license to Apple's software and technology on terms set by Epic – not Apple – that are favorable to Epic, for Epic's own purposes.

71.   Epic's injunctions and its experts' proposals seek to preclude Apple from claiming the well-established rewards from innovation and obtaining intellectual property protection: compensation and/or the right to exclude. Epic's requested relief would prevent Apple from enforcing the IP rights in which it has invested and obtained exclusive ownership rights, including preventing Apple from enforcing, or even determining, the requirements and restrictions set out in its various license agreements and guidelines, thereby violating Apple's right to decide whether, and if so on what terms, it will license its technology protected by patents, copyrights, trademarks and/or trade secrets, which are governed by laws giving Apple exclusive rights.

IV. Oath

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Respectfully submitted,

_____

James E. Malackowski

Dated: April 23, 2021

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